Texas Department of Transportation

DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

October 22, 2004

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th St. SW
Washington, DC 20554

RE: ET Docket No. 04-374, DA 04-3039

Madame Secretary:

The Texas Department of Transportation (TxDOT) hereby expresses its strong support for the attached petition for waiver of the FCC rules as they apply to certain ground penetrating radar (GPR) devices. We have found that GPR technology, especially non-contact horn antenna GPR technology, to be extremely useful in discharging our responsibility of ensuring the safety of the people of Texas. We have used this technology for over 10 years and it has proven to be a safe, economical, fast and accurate means of determining whether subsurface conditions in roadbeds exist which require immediate or long-range attention. It is critical in this connection that the GPR devices be capable of surveying the pavement structure in question at the posted speed limit. This feature is essential because it permits us to conduct GPR surveys without closing off lanes of traffic. High-speed GPR surveys lessen the safety hazard to work crews and the traveling public as well as reducing the required manpower and costs which such closings entail. In addition, we can survey far larger stretches of highway and do so more frequently than would be possible without this technology. Attached are two letters in support of TxDOT's continued use of this technology.

GPR technology provides TxDOT with a means for determining pavement layer thickness and the presence of moisture damage with minimum coring and without trenching the pavement. In fact, GPR technology allows the user to collect this information at highway speeds which enhances safety by eliminating stop-and-go traffic operations or closing a lane of traffic. Layer thickness information and the presence of moisture damage are important factors used in determining the structural condition of a pavement. Texas spends over $ 1.2 Billion per year on pavements and TxDOT has determined that GPR technology is a valuable tool for managing our pavements and ensuring that the appropriate strategy is selected for a given pavement structural condition. This saves taxpayers money by ensuring that the proper treatment is selected at the appropriate time.

One very dramatic case in point occurred on IH35 in downtown Austin, Texas during the afternoon rush hour. A water main broke beneath the outside lane. We dispatched a GPR system to survey the subsurface damage. The GPR data showed us immediately that the base and part of the sub-base had been washed away and that a huge cavern had formed beneath the pavement's surface. The lane was closed to traffic immediately.

Within one hour of the lane closure, the pavement caved in forming a hole large enough to hold a school bus. Needless to say, without the use of GPR technology this situation could have caused extreme danger to the driving public. There are numerous, less dramatic but dangerous examples of the inherent values of using GPR technology within the state Texas, namely the location and extent of sink holes.

Equipment grandfathered under the Federal Communications Commission's (FCC) July, 2002 waiver order has served us well. However, new equipment which is presently available and compliant with the FCC's 2002 Ultra-Wide Band (UWB) rules, has been found to be largely ineffective at highway speeds. Not only are we unable to expand our existing small fleet of non-contact horn antenna GPRs, but we will also be unable to replace this equipment in the future as it reaches the end of its useful life. TxDOT is trying to expand its use of non-contact GPR by purchasing and implementing 12 more units. The addition of these 12 units to our current GPR antenna systems will ensure that the entire state of Texas (over 180,000 lane miles) can be covered within a few hours notice. This will permit us to prevent on a much wider scale the kind of hazard which I noted above. By waiving its rules in the case of non-contact horn antenna GPRs, the Commission can ensure that the critical job of ensuring the safety of our highways continues. Absent such a waiver, the condition of our highways can be expected to deteriorate, with attendant danger to life and property as well as increased user cost.

Sincerely,

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Thomas R. Bohuslav, P.E.
Director, Construction Division

Attachments

Texas Department of Transportation
DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

July 2, 2004

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th St. SW
Washington, DC 20554

Attention: Chief, Office of Engineering and Technology

RE: Support from the Texas Department of Transportation for Request for Waiver of Sections 15.509 and 205 of the Commission's Rules submitted by Robert Peterson, dba Wavebounce, et al.

Madame Secretary:

The Texas Department of Transportation (TxDOT) hereby expresses its strong support for the attached petition for waiver of the Federal Communications Commission (FCC) rules as they apply to certain ground penetrating radar (GPR) devices. We have found that GPR technology, especially non-contact horn antenna GPR technology, to be extremely useful in discharging our responsibility of ensuring the safety of the people of Texas. We have used this technology for over 10 years and it has proven to be a safe, economical, fast and accurate means of determining whether subsurface conditions in roadbeds exist which require immediate or long-range attention. It is critical in this connection that the GPR devices be capable of surveying the pavement structure in question at the posted speed limit. This feature is essential because it permits us to conduct GPR surveys without closing off lanes of traffic. High-speed GPR surveys lessen the safety hazard to work crews and the traveling public as well as reducing the required manpower and costs which such closings entail. In addition, we can survey far larger stretches of highway and do so more frequently than would be possible without this technology.

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technology this situation could have caused extreme danger to the driving public. There are numerous, less dramatic but dangerous examples of the inherent values of using GPR technology within the state of Texas, namely the location and extent of sink holes.

Equipment grandfathered under the FCC's July 2002 waiver order has served us well. However, new equipment which is presently available and compliant with the FCC's 2002 UWB rules, has been found to be largely ineffective at highway speeds. Not only are we unable to expand our existing small fleet of non-contact horn antenna GPRs, but we will also be unable to replace this equipment in the future as it reaches the end of its useful life. TxDOT is trying to expand its use of non-contact GPR by purchasing and implementing 12 more units. The addition of these 12 units to our current GPR antenna systems will ensure that the entire state of Texas (over 180,000 lane miles) can be covered within a few hours notice. This will permit us to prevent on a much wider scale the kind of hazard which I noted above. By waiving its rules in the case of non-contact horn antenna GPRs, the Commission can ensure that the critical job of ensuring the safety of our highways continues. Absent such a waiver, the condition of our highways can be expected to deteriorate, with attendant danger to life and property as well as increased user cost.

For the above cited reasons, on behalf of the Texas Department of Transportation, I respectfully urge the FCC to grant the captioned waiver. The waiver, if granted, will assist the State of Texas and this agency in fulfilling its mission to provide safe public roads for its citizens and visitors; whereas, lives would be endangered without the ability to use the subject GPR equipment.

Sincerely,

Steven E. Simmons, P.E.
Deputy Executive Director

Texas Department of Transportation

DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

June 24, 2002

Mr. Ed Thomas, Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Dear Mr. Thomas:

In reference to a revision to Part 15 of the Commissioner's Rules regarding Ultra-Wide band Transmission Systems. ET Docket 98-153, First Report and Order, states that:

"'Ground Penetrating Radar Systems must be operated below 960 MHz or in the frequency band 3.1 – 10.6 GHz," and

"Ground Penetrating Radar System...operation is restricted to law enforcement, to fire and emergency rescue operations, to scientific research institutions, to commercial mining companies, and to construction companies."

The Texas Department of Transportation (TxDOT) manages over 180,000 lane-miles of pavement and spends over $3 billion annually on pavement construction, maintenance, and rehabilitation. We are committed to the development and implementation of innovative technologies for evaluating the condition of our pavements to ensure that the users of Texas roadways have a safe, comfortable, efficient and economical highway system.

In that regard, TxDOT has made a significant investment in research and development of ground-coupled and non-contact ground penetrating radar (GPR) technology. We own and operate two non-contact van mounted GPR systems that are used for non-destructive evaluation of pavement structures. Two additional non-contact van mounted GPR systems have been purchased. We currently use two brands of non-contact GPR antennas (Wavebounce and Pulse Radar). Both of these GPR systems have very similar functional characteristics with the following parameters:

- central frequency of 0.96 GHz,
- the system Effective Isotropic Radiated Power EIRP power of –30dBm, and
- bandwidth of 1.24 GHz.

TxDOT has successfully used both ground-coupled and non-contact GPR technologies to evaluate subsurface pavement conditions to identify where pavement repairs are needed and to identify the extent of catastrophic failures such as sinkholes. We have made arrangements with the Federal Communications Commission's (FCC) Maryland Laboratory to ship one of its non-contact antennas for FCC testing.

We respectfully request that the FCC grant TxDOT a waiver to the revision to the Part 15 ruling that restricts operation of GPR Systems within the 960 MHz to 3.0 GHz frequency range. We request that TxDOT and other State Highway agencies be included in the list of agencies, institutions, and businesses that are permitted to operate GPR systems. We also request a waiver of the advanced coordination item included in the new ruling. Finally, we request the FCC grant TxDOT a blanket coordination waiver that covers the boundaries of the State of Texas.

Sincerely,

M. W. Behrens

Michael W. Behrens, P.E.
Executive Director